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CONTENTS

AIR

Soviet Civil Air Transport Developments Described (A. Troshin; AVIATSIYA I KOSMONAVTIKA, No 4, 1981)	1
 Briefs	
New Ticket Offices	4
New Assignments	4
Summer Schedule Introduced	4
Minsk-2 Airport Construction	5
New L-410 Aircraft	5
L-410 Aircraft on Skis	5

MOTOR VEHICLES

Automotive Industry Progress Reported (ECONOMICHESKAYA GAZETA, Jun 81)	7
 Higher Quality, Production of Refrigerated Trucks Needed (PRAVDA UKRAINY, 12 Jul 81, IZVESTIYA, 19 Feb, 18 Jul 81)...	
(PRAVDA UKRAINY, 12 Jul 81, IZVESTIYA, 19 Feb, 18 Jul 81)...	11
Liquid Nitrogen Research, by B. Verkin	
Mass Production Needed, by V. Romanyuk	
Gosplan Followup, by V. Romanyuk	

RAILROAD

Improvement Sought in Kazakhstan Railroad Transport (N. Isingarin; NARODNOYE KHOZYAYSTVO KAZAKHSTANA, No 1, 1981)	23
 Results of Railroad Work Competition Assessed (Editorial; GUDOK, 6 Jun 81)	
(Editorial; GUDOK, 6 Jun 81)	29

Better Planning of Refrigerator Rail Car Transport Urged (O. Guvarev, Ya. Zabara; GUDOK, 7 Jun 81)	32
Methods for Train Formation Discussed (L. Bulankov; GUDOK, 13 Jun 81)	35

OCEAN AND RIVER

Briefs

New Tankers Described	38
'Otto Schmidt' Research Icebreaker	38
New Estonian Port	38
New Amphibian	39

AIR

SOVIET CIVIL AIR TRANSPORT DEVELOPMENTS DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 4, 1981 pp 44-45

[Article by A. Troshin: "The New Take-Off of Aeroflot"]

[Text] The "Basic Directions in the Economic and Social Development of the USSR for 1981-1985 and for the Period Up to 1990" emphasize: "In air transport we are to continue developing the network of airports on the trunk and local air routes equipping them with modern mechanization and automation for the transport processes and for aircraft servicing; we will build and reconstruct repair plants and aviation technical facilities for civil aviation, particularly in the regions of the North, Siberia and the Far East."

This important program document of our party also envisages measures to significantly reduce the proportional fuel consumption by the rational operation of aviation equipment, by reducing fuel losses, by improving the efficiency of aircraft engines and by bettering the weight and aerodynamic specifications of the aircraft.

In addition we will continue to widely introduce on-board and ground navigation and radio electronic systems and this will automate air traffic control and the taking off and landing of the aircraft. Flight regularity and safety will be increased. The volume of passenger travel should increase by approximately 1.3-fold.

These are the prospects. With what indicators have the aeroflot employees commenced the new five-year plan? In 1976-1980, a half billion passengers and 14 million tons of express national economic freight and mail were carried by air. In comparison with the Ninth Five-Year Plan, air traffic increased by 1.3-fold as was envisaged in the "Basic Directions for the Development of the USSR National Economy in 1976-1980."

For these successes the civil aviation employees were warmly and sincerely congratulated on behalf of our party's Central Committee by the General Secretary of the CPSU Central Committee and Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev. In the aeroflot collectives this caused a new upsurge in political and labor activeness.

In the Tenth Five-Year Plan particular attention has been given to developing passenger aviation in Siberia, the Far East and Far North. Communications have improved between these remote areas which are very important in the economy of our state and the nation's center and resorts. A major event was the opening up of

Il-62 service between Moscow and Petropavlovsk-Kamchatskiy and Magadan. The Tu-154 has started regular trips from Moscow to Noril'sk, Pevek, Yakutsk and Krasnoyarsk.

It must be pointed out that three quarters of all the trips carried out under the central schedule now employ the modern airliners such as the Il-62, Il-62M, Tu-154 and Tu-134. These aircraft have now become the basic types of aircraft in our civil aviation. Due to their use the average flight speed has been significantly increased. While at the beginning of the Tenth Five-Year Plan this was 620 km an hour, in 1980, this increased by 110 km an hour.

At the end of the last five-year plan, a new aircraft, the Il-86, designed for 350 seats began operating on the Moscow--Tashkent route. This will make it possible to increase the traffic volume by 2- or 3-fold on routes with intensive air traffic and high passenger levels.

In the opinion of pilots, engineers and other specialists, the Il-86 successfully combined the many years' experience of Soviet aviation construction with the most modern achievements. More than 50 new production methods have been used in manufacturing it. As a result the aircraft is safe, comfortable and has a whole series of major improvements over other aircraft of this class. All the systems have multiple back-up systems and this guarantees flight safety with the failure of various units and mechanisms. The fuselage which has a diameter of 6.08 m is divided into two decks. On the upper deck are the passenger cabins of unusually large size with high ceilings. The sensation of spaciousness is emphasized by the two wide isles between the seats. On the lower deck is the baggage department which makes it possible to achieve a "carry-on baggage" system. The passengers in entering the aircraft on built-in side ramps themselves place their things on racks with cells for suitcases and these are numbered in accord with the seat rows.

The Il-86 has been developed for operating on medium-long runs. With a maximum payload of 42 tons, its virtual range is 3,600 km. In maintaining a cruising speed of 850-950 km an hour (at an altitude of 9,500-10,000 m), it covers this distance in approximately 3 hours. Correspondingly, a 2,000-km flight will take a little more than 2 hours.

At the beginning of the 11th Five-Year Plan, regular service started on yet another new aircraft, the Yak-42, designed for short trunk routes in our nation up to 1,800 km long. Externally the new aircraft is very similar to its predecessor, the Yak-40, but differs in many ways from it. The passenger cabin is designed for 120 seats. The normal payload is 10.5 tons and the maximum flight range is 3,000 km. The aircraft is piloted by a two-man crew. The Yak-42 possesses good take-off and landing performance. The length of the required runway is 1,800 m. Three turbofan engines are located in the rear of the fuselage and this has made it possible to reduce the noise level and vibration in the passenger cabins.

The introduction of more advanced aviation equipment over the past 5 years has made it possible to approximately double the number of direct through trips and flights with one intermediate stop. These now comprise 86 percent of the total number of trips made. Due to the use of a computer, optimum airplane traffic schedules have been compiled and this increases their efficient operation. Thus, the payload, one of the most important efficiency indicators, is 83 percent.

serious attention is also being given to improving in-flight services as well as at airports and air travel agencies. In 1976-1980 alone, more than 20 air terminals, baggage pavillions and passenger service buildings were built and put into use and city agencies were organized in 19 major centers of the nation.

For the opening of the 22d Olympic Games in Moscow, an air terminal complex Sheremet'yevo-2 was put into use. This was designed to handle 2,100 passengers an hour. Next to the air terminal the building of a comfortable 500-place hotel has gone up.

There has been an increase in the number of air ticket sales offices. There are almost 7,500 of them while the number of service personnel has not changed. This has been achieved by automating the ticket sales and seat reservation operations.

The automated "Sirena" system provides great help in serving air passengers. At present all the republic and many kray and oblast centers, including Magadan and Petropavlovsk-Kamchatskiy, have access to it. Ticket sales with guaranteed departure date, number and seat have been organized in more than 100 cities. Centralized air ticket sales with the aid of the "Cheget" system has been introduced in many cities of the nation.

The planned program of automating air traffic control is being successfully carried out. The airplanes continue to be equipped with a range of automatic landing approach equipment. Virtually all the modern aircraft are equipped with such devices.

In the 11th Five-Year Plan, as in the Tenth, the aviators will take an active part in developing the productive forces of the Far East, Siberia and the North. The amount of work carried out by civil aviation in the national economy, including agriculture, will increase. We will continue to further expand and deepen Soviet aviation cooperation with the CEMA countries and with all states which are interested in developing air communications with our country.

At present the aeroflot employees are studying the historic materials of the 26th CPSU Congress with great inspiration and are fully determined to work even better to fully carry out the plans set for the 11th Five-Year Plan.

Each day the socialist competition is broadening in the sector. All collectives and hundreds of thousands of aviators have been taken up in it. It is pleasant to say that the high socialist obligations are being carried out with honor. In the vanguard of the competition are the delegates to the 26th CPSU Congress, the aviation workers who received high state decorations for the results of the five-year plan.

The constant concern of our Leninist party and the Soviet state for the development of the twice order-winning aeroflot impels the civil aviation workers to achieve new, even higher results in labor for the sake of further strengthening the might of our great motherland.

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AIR

BRIEFS

NEW TICKET OFFICES--Leningrad--The Aeroflot routes are becoming more active with each passing day. A considerable increase has taken place in the number of passengers arriving at Pulkovo Airport and departing from Leningrad for various cities throughout the country. In particular, an increase has taken place in the frequency of movement of aircraft along those routes for which there is an increased demand -- air lines connecting the city on the Neva River with the country's resort zones, with the capitals of the union republics and with the cities of Siberia, Central Asia and the Far East. This summer the Leningrad aviators will begin flying the new YaK-42 passenger aircraft, which seats 120 passengers. As early as July it will be employed on the international route Leningrad - Helsinki - Leningrad. During the summer, the plans call for the YaK-42 to be used for flights from Leningrad to Kiev. The residents of Leningrad and guests of the city have been greatly impressed by a very promising form of service -- the sale of round trip tickets. They can be obtained for flights from Leningrad to Sochi, Krasnopol', Anapa, Simferopol', Mineral'nyye Vody and many other cities throughout the country. For example, a T-154 aircraft is being made available for one flight daily from Sochi for passengers having round trip tickets. In order to save time for the passengers, the workers attached to the central agency, in addition to the large ticket offices which already exist in various rayons throughout the city, are creating large supporting rayon ticket offices. Just such a ticket office, with five workers, will provide services on the Petrograd side of Kirov Boulevard. [by T. Nikitina] [Text] [Moscow VOZDUSHNYY TRANSPORT 9 Jun 81 p 2] 7026

NEW ASSIGNMENTS--Kuz'kin, V.V., assigned as Deputy Minister of Civil Aviation. Dergilev, I.S., assigned as the Chief of the Yakutsk Civil Aviation Administration. Orlovets, I.V., assigned as USSR Deputy Representative to the IKAO [International Civil Aviation Organization] in Montreal (Canada). Dolmatov, M.A., assigned as Chief of the Civil Aviation Administration for a uniform system for controlling air movements. [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 30 May 81 p 2] /026

SUMMER SCHEDULE INTRODUCED--The summer schedule for Aeroflot routes commences on 1 June. A press conference was held in this regard at Pulkovo Airport, during which the journalists listened to speeches delivered by the 1st Deputy Chief of the Leningrad Civil Aviation Administration L.V. Agoshin, the Assistant Chief of the Administration for International Shipments V.I. Strakhov, the Chief of the Central Agency for Air Communications V.A. Golubkov and the commanders of Leningrad associations of aviation enterprises Yu.A. Valakin and V.I. Chernykh. During this

coming summer, up to 200 flights will arrive daily at Pulkovo Airport and the same number depart. Increases will take place in the frequency of aircraft movements along practically all of the main routes and air lines (to the resort regions of the country, to the capital of union republics and to cities in Siberia, the Far East and Central Asia). The IL-18 and TU-104 aircraft have replaced completely the TU-154 and TU-134 air liners. And in July the Leningrad Aviation Enterprise will proceed with the operation of the YaK-42 aircraft. This is a new 120 seat air liner having a maximum cruising speed of 800 kilometers per hour, which will be employed for medium distance flights. The initial flights of the YaK-42 will be from Leningrad to Kiev. It will also replace the TU-134 on the international line connecting Leningrad with Helsinki. It bears mentioning that at the present time the aircraft of the Leningrad Administration are flying to 23 cities in 18 foreign countries. The Leningrad aviators constantly display concern for ensuring that their passengers are comfortable both when airborne and when on the ground. In particular, a great deal is being done to improve the sale of tickets. A new ticket office will open in the near future at the Grazhdanskiy Prospekt Subway Station and another will be moved from Skorokhodova Street to Kirov Boulevard. The sale of round trip tickets will be expanded and primarily in connection with the resort cities of Sochi, Simferopol', Anapa and Odessa. For example, one flight daily is being reserved at Sochi (152 seats) for those passengers who acquired round trip tickets in Leningrad. It should be mentioned that these tickets are sold 2 months prior to the departure of the aircraft on its return trip. This year the Leningrad Civil Aviation Administration will handle at its airports 4.9 million passengers and more than 60,000 tons of important national economic cargo and mail. The Leningrad aviators are also furnishing a great amount of assistance to specialists in various spheres of the national economy and to workers in the fields. [by V. Tarasenko] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 30 Mar 81 p 4] 7026

MINSK-2 AIRPORT CONSTRUCTION--Work on the construction of the new Minsk-2 Airport is ahead-of-schedule for the quarter. An automatic telephone station for 1,000 numbers was placed in operation ahead-of-schedule here in June and the runway has been lengthened. During the course of installing the VPP [runway]" stated the director of construction for the airport, V. Sokolovskiy, "it became obvious that its practical potential could be increased considerably. Lengthening of the runway during operations would require considerable additional expenditures. The artificial surface of the airport's runway is presently 820 meters longer and this makes it possible to accept all types of aircraft. In all, 30 million rubles have already been employed for the projects of the new Minsk-2 Airport. [by I. Inin] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 9 Jun 81 p 2] 7026

NEW L-410 AIRCRAFT--Irkutskaya Oblast--The Nizhneudinsk Aviation Enterprise of the Eastern Siberian Civil Aviation Administration has received the new L-410 aircraft, created as a result of collaboration between the USSR and the CSSR. They are replacing the AN-2. These new and comfortable aircraft, which carry 15 passengers, have commenced carrying out regular flights to cities throughout the oblast. The aircraft can fly under complicated weather conditions, day or night and it can land on dirt airfields. This will promote the introduction of these new aircraft on many routes in the Angara River region. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 24, Jun 81 p 12] 7026

L-410 AIRCRAFT ON SKIS--Salekhard--At the Salekhard Airport, under conditions of the Far North, test flights are being carried out on the Czechoslovakian produced L-410

aircraft. For the very first time in operational practice, the L-410 has taken off and landed on skis. Czechoslovakian test pilots and test pilots from the Moscow Sheremet'yevo Airport are testing the aircraft in the skies over the Yamal Peninsula. The tests are being monitored by a large group of specialists from Czechoslovakia. In the future, the comfortable L-410 aircraft will replace the AN-2 aircraft on the local Yamal Peninsula air lines. [by A. Sergiyevskiy] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 19 May 81 p 3] 7026

CSO: 1829/286

MOTOR VEHICLES

AUTOMOTIVE INDUSTRY PROGRESS REPORTED

Moscow EKONOMICHESKAYA GAZETA in Russian No 23, Jun 81 p 2

[Article: "The Development of the Automotive Industry"]

[Text] The automotive industry is one of the dynamically developing branches of our economy. Around 11 million trucks, passenger cars and buses were produced in our country in the 10th Five-Year Plan. Labor productivity in the branch rose 34.7 percent. The average carrying capacity of each transport unit was increased by 25 percent. This was equivalent to providing the national economy with around 200,000 additional ZIL Association 5-ton trucks a year.

In the last 5 years the mass production of many progressive types of automotive equipment was mastered. They include the Kama Motor Vehicle Plant's trucks with trailers and semitrailers, the ZIL-133 10-ton vehicles, the Ural-4320 diesel vehicles and the Belorussian Motor Vehicle Plant's 75-ton dump trucks. The family of passenger cars was supplemented with the new Niva and VAZ-2105 models. The Volga and Zaporozhets vehicles have been modernized. The L'vov Bus Plant has begun to build buses with diesel engines.

In all, twice as many vehicles with diesel engines were manufactured between 1976 and 1980 than during the Ninth Five-Year Plan. This has conserved over a million tons of fuel.

Just before the beginning of the 26th party congress, Comrade L. I. Brezhnev heartily congratulated all of the builders of the Kama Vehicle Plant on the operation of the country's largest motor vehicle plant at the full projected capacity of 150,000 new diesel vehicles a year.

Levels of Future Growth

The industry will have great opportunities for development in the next 5 years. Plans for 1981-1985 envisage further growth in the output of freight vehicles, passenger cars, buses, trailers and semitrailers, engines for motor vehicles and tractors, bearings, motorcycles, bicycles and other products.

The overall branch production volume will increase by more than one-fourth.

According to these plans, there will be a larger increase in the output of cross-country vehicles, trailer and semitrailer trucks and heavy freight vehicles. For

example, the output of all types of truck trailers will increase by 35 percent. The series manufacture of heavy vehicles with a carrying capacity of 110-120 tons will be mastered at the Belorussian Plant. Construction organizations will begin to receive new dump trucks from the Minsk, Kremenchug and Kama vehicle plants, as well as dumper-rigs with a freight capacity of 14-27 tons.

More vehicles of a broader variety will be delivered to rural areas. For example, the Ural and Kutaisi plants will begin producing transport-technological cross-country trucks and rigs with a capacity of 7-14 tons. These vehicles will be designed to operate along with various types of agricultural equipment in a single technological cycle.

From the standpoint of national economic effectiveness, it is always better to transport freight in large volumes. In this connection, high growth rates have been planned for the output of trailer equipment, particularly at the Krasnoyarsk, Chelyabinsk and Stavropol' plants. The Neftekamsk dumper plant will begin producing tank trailers.

The collectives of enterprises manufacturing passenger cars and buses will contribute to the technical progress of the branch. Models of the Volga plant vehicles will be updated even more. Some of them have been manufactured for more than 10 years now and have become obsolete. For this reason, the VAZ-2101 will gradually be replaced by the VAZ-2105 and VAZ-2107 vehicles and other models, but the VAZ-2102, VAZ-2106 and Niva will still be produced. In the next 5 years fundamentally new VAZ-2108 vehicles will be manufactured with front-wheel drive and a completely different exterior.

Preparations are being made for the production of a new front-wheel drive vehicle with fuel injection at the Zaporozh'ye Plant. Steps have been taken to raise the technical level of the Moskvich vehicles.

The new diesel buses of the Likino Plant, which will be produced at the end of the 5 years, will be more convenient for passengers. Preparations are being made for the production of small city buses in Pavlovo-on-Oka. The same buses, with minor variations, will be used to serve passengers in urban rayons and for tourist excursions. There will be an increase in the output of RAF buses in Riga and all vehicles at the Kurgan Motor Vehicle Plant.

In the 10th Five-Year Plan the Ministry of the Automotive Industry assumed control over the repair and technical maintenance of privately owned passenger cars in 10 union republics. Last year this system, Avtotekhobsluzhivaniye, performed services worth 160 million rubles.

This new work needs improvement. In the next 5 years new services will be offered, such as out-of-shop repairs and subscription repairs and maintenance. The material base will be strengthened, another 1,400 repair shops will be opened, and existing stations will be better equipped. Body repairs, major overhauls of engines and other parts and the restoration of worn parts must be offered on a broader scale. The volume of services provided to citizens with their own vehicles will increase by 43 percent, including a twofold increase for Moskvich vehicles.

In order to heighten labor productivity in materials handling operations in the national economy, the Ministry of the Automotive Industry will increase supplies of lift trucks. Additional capacities are being built at the Yerevan and L'vov plants for this purpose. In 1985 the output of lift trucks will be 1.8 times as great as in 1980.

Striving for Economy in All Areas

The primary objective of automotive industry personnel is the accelerated development of the production of trucks with diesel engines. This will make more transport work with lower expenditures of resources possible, reduce fuel expenditures and lower the cost of maintaining the nation's motor pool. In the 11th Five-Year Plan the output of diesel vehicles will be increased through the development of their production at the Kama, Kremenchug, Minsk, Moscow imeni Likhachev and Ural plants. Facilities are being established for the production of diesel engines and vehicles at the Kutaisi Plant.

A rise in the technical level of the gasoline engines produced in the industry could also reduce fuel expenditures. Vigorous work is being conducted in this area at the Gor'kiy Plant, the Moscow Plant imeni Likhachev, the Zavolzhsk and Melitopol'sk Motor Plants and enterprises manufacturing engine parts and components. In combination with the measures to increase the number of diesel vehicles in the national motor pool, this will produce a savings of around 3-4 million tons of fuel within 5 years.

Another important objective of automotive workers is the considerable reduction of proportional expenditures of metal. Within the 5 years the rolled metal consumption norm is to be lowered by 18 percent. This will be a complex matter, necessitating a search for new, more durable construction materials and the increased use of plastic. The production of parts from metallic powders needs rapid development. Simultaneous steps will be taken to improve the technology and raise the use coefficient of metal.

Renewal of Fixed Capital

In the last 5 years much was done in the branch to renew fixed capital. New capital worth around 9 billion rubles was put in operation. The capital-labor ratio rose 1.5-fold. The level of mechanization and automation rose. More than 80,000 pieces of new, highly productive equipment were installed in plants. Heightened labor productivity was responsible for 79 percent of the increase in production.

But our possibilities for more efficient production are not in any sense exhausted. Power- and metal-conserving technology must be incorporated more resolutely at all enterprises in foundries, forges and other production areas.

Progress has been made in the use of highly productive, primarily automatic equipment and highly durable instruments in machine shops and assembly plants. The vehicle plants will require around 1,500 more automatic lines and 3,000 machine tools with digital programming. More industrial robots will be used in assembly and welding operations.

An important role in the ministry's plans to raise the level of mechanization and automation has been assigned to the ministry's own specialized machine tool building enterprises. More than 300 complex automatic lines, around 2,000 robots of various types and numerous units for the plasma jet spray-coating of parts and instruments will be manufactured.

The updating of technology and the incorporation of progressive equipment are primarily accomplished when production units are remodeled. Much will already be done this year to establish new facilities at the Ural and Kutaisi plants, the ZIL Association, the Belorussian Motor Vehicle Plant and many other enterprises.

The improvement of economic management and the use of reserves to heighten production efficiency and improve quality must be specifically reflected in the draft five-year plans that are now being drawn up in branch associations and plants.

Productive and creative labor in all areas of automobile manufacture will guarantee the success of operations. The Moscow workers' initiative regarding the extensive use of scientific and technical achievements for the conservation of labor, material and energy resources, commended by the CPSU Central Committee, is gaining popularity in the branch. The collective of the Plant imeni Likhachev--one of the initiators of the competition--has resolved to lengthen the service life of vehicles by 16 percent and that of engines by 20 percent in the next 5 years, keep expenditures of rolled ferrous metals well below the norm and save the national economy around 320 million rubles between 1981 and 1985.

Industry personnel are successfully keeping up with their 1981 assignments. Products worth more than 15 million rubles were manufactured in excess of the plan for the first 4 months. All production associations kept up with the January-April program. The leaders of the competition include the collectives of the ZIL Association, the Gorkiy, Volga, Ural, Kama and Kremenchug motor vehicle plants and the GPZ-1 (Moscow) and GPZ-4 (Kuybyshev) plants. Quantities manufactured in excess of assignments include 3,000 motor vehicles and 5.2 million rubles' worth of spare parts.

It should be stressed, however, that the production associations of eight plants did not keep up with product sales assignments despite the excellent industrywide indicators. The work of the Moscow Motor Vehicle Plant imeni Leninskiy Komsomol has fluctuated in quality.

The heads of ministries, associations and enterprises must take additional steps to ensure that consumer orders are filled accurately, steadily and completely.

8588
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MOTOR VEHICLE

HIGHER QUALITY, PRODUCTION OF REFRIGERATED TRUCKS NEEDED

Liquid Nitrogen Research

Kiev PRAVDA UKRAINY in Russian 12 Jul 81 p 2

Article by B. Verkin, director of the Physico-Technical Institute of Low Temperatures of the UkrSSR Academy of Sciences, academician of the UkrSSR Academy of Sciences, and USSR and UkrSSR state prize winner: "The Functions of Liquid Nitrogen"

Text The refrigerated truck of peaches arrived at its destination, leaving the road from the orchards of the south far behind. Inspectors of the base opened the doors of the truck and saw... No, not beautiful fruit, but something quite different: the delicate fruit did not survive the trip...

Unfortunately, a situation such as this is not so infrequent—even when a Freon refrigerating plant is in good working order. When succulent fruit which is meant for people's tables perishes, it means that the labor of those who grew the crop also has been wasted.

The struggle against losses has been discussed from the lofty platform of the 26th CPSU Congress. How can these losses be avoided? Dependable transportation, storage facilities and refrigerators are necessary for efficient operation of the agro-industrial complex, it was emphasized at the congress. Freon and other traditional cold storage plants cannot fully meet our needs today. More efficient processing methods and equipment for storing food products are needed. Liquid nitrogen, which has a temperature of minus 196 degrees Celsius, can help. The outlook for its use is corroborated by both domestic scientific and technical studies and foreign data: a number of countries already are making use of quick-freezing plants which operate on liquid nitrogen, refrigerated railway cars and trucks which operate with nitrogen cooling, and nitrogen-dispensing stations.

A great deal also has been done in this area by the Physico-Technical Institute of Low Temperatures (FTINT) of the UkrSSR Academy of Sciences, which always closely coordinates its research with important requirements in practice. A conspicuous place in our basic and applied research is held by the solution of scientific, technical, organizational and certain other problems related to increasing the production of liquid nitrogen and improving the effectiveness of its use for various objectives, primarily for refrigerating perishable products.

Nitrogen cooling systems for refrigerated trucks with a carrying capacity of 1.5 to 10 tons have been developed at the institute. They have proved to be excellent for shipping peaches, grapes, strawberries, tomatoes, cherries and other fruits, vegetables and berries from Moldavia, the Crimea and the Kuban to Moscow and Leningrad, decisively superior in comparative tests with the usual refrigerated trucks equipped with Freon-cooled compressors. The nitrogen system, which is very simple in design, provides an inert atmosphere in the truck and quickly cools fruits and vegetables immediately after they are loaded at the places they are harvested. Control of the system is automated; different temperature regimes can be established and maintained from the cab of the vehicle.

The system should be economical. In putting our research efforts into practice, we attach considerable importance to the record of their economic effectiveness. For example, in test shipments of peaches, the economic gains exceeded 200 rubles for each ton of fruit, that is, more than 2,000 rubles in just one trip of a 10-ton refrigerated truck. It has been estimated that introduction of nitrogen cooling equipment for perishable fruit shipments from just Moldavia and the Kuban will save over 3 million rubles annually. And the figures will be significantly higher on a national scale.

Liquid nitrogen systems have been developed not only for interurban shipments but for those within cities as well. Our institute provided the "NAST-1" system for ten 1.5-ton vans in which the Khar'kov Meat Combine ships meat, sausages, meat convenience foods, and cooking products to stores. On such trips around the city the trucks stop at stores frequently, and warm air goes into the truck body during unloading. The Freon cold storage plant of ordinary vans is not able to reduce the temperature in the body again before stopping at the next shop, while the nitrogen system copes with this excellently.

A modified version of a van with a nitrogen cold storage system also has been built for shipping milk and dairy products within cities. Experimental models of the "NAST-2" system for 5-ton refrigerated trucks have been tested successfully.

In all, the FTINT has converted 24 vehicles for nitrogen cold storage systems. Their economy has been proved in practice, even at the present cost of liquid nitrogen. But of course, the quantity of such equipment is obviously inadequate, and the work must be shifted to an industrial basis. I would remind you that overall development of the refrigeration industry and expansion of the use of artificial cooling in processing and storing agricultural produce has been stipulated in the Basic Trends, approved by the 26th CPSU Congress.

The success of shipments is not promoted at all by the fact that, in the chain of delivery of such perishable products as, say, fruits or vegetables, there is at present no single boss who bears responsibility for the quality of fruit transported over the entire route from the harvest to the shops. The kolkhoz or sovkhoz loads the refrigerated trucks and seals them. Transport workers deliver the cargo as assigned. But the consignees--the trade workers--find the fruit in deplorable condition when they break the seals. For this reason, the

best method of eliminating departmental dissociation must be found and, as the 26th CPSU Congress decisions require, improvement in economic links among sectors, organization of their efficient interaction in raising the production of agricultural output, and improvement in its preservation, transportation, processing and delivery to the consumer must be ensured.

Further expansion of the variety and improvement in the quality of fish products also has been stipulated by the Basic Trends. Our institute is proposing long-term research in this regard—an independently functioning container with nitrogen cooling for the storage and shipment of fish, which has been successfully tested at sea on ships of the Azcherryba [Fishing Industry of the Azov Sea and Black Sea Main Administration].

Here is just one example showing the effectiveness of such containers. Everyone is familiar with the canned goods called "sprats." The catch of this fish in the Baltic basin has decreased, and fish-canning plants have begun to become aware of the lack of raw material. There are quite a few such fish in the Black Sea, but being unusually delicate, the spoil quickly and are practically untransportable under ordinary circumstances. But by being refrigerated in a nitrogen container, the Black Sea sprat retains its palatability for 10 days—and longer several times--than when it is stored the traditional way in ice.

I would particularly like to mention the important problems connected with the necessity of increasing the production of liquid nitrogen. Our institute's initiative has received support, and specific steps have been taken to accelerate assimilation of the achievements of the physics and technology of low temperatures in the national economy of the Ukrainian SSR. In particular, the Yenakiyev and Kommunarsk Metallurgical Plants have been engaged in by-product production of liquid nitrogen in their air-fractionating installations. Previously in compressing and fractionating air, the metallurgists used oxygen and released the nitrogen they did not need into the atmosphere. Now they have begun to compress nitrogen as well; essentially, an enterprise has not required additional capital investment, and the liquefaction costs less than at specialized nitrogen stations.

If the experience is adopted by all enterprises of the UkrSSR Ministry of Ferrous Metallurgy, the republic's requirements for liquid nitrogen can be met in full. It is expedient to make the valuable undertaking of the Yenakiyev and Kommunarsk workers widely known at ferrous metallurgy plants in other parts of the country as well.

Increasing the production of liquid nitrogen gives rise to problems in storing and shipping it. Specialized transport for liquefied gases and depositories for them are being turned out in series production by domestic industry; for this reason, we hope that the UkrSSR Gosplan will help to effectively resolve these problems.

Operations to increase production of liquid nitrogen in the Ukraine and to develop efficient nitrogen cooling systems for refrigerated transport have been included in the "Agrokompleks" overall special-purpose program, which will become an important part of the new five-year plan. In resolving these problems,

the collaboration between science and production should be reinforced even further. The FTINT intends to continue joint operations in collaboration with the republic ministries of ferrous metallurgy and meat and dairy industry, fruit and vegetable farming, and certain other departments.

Liquid nitrogen can be utilized not only for storing food products. One of the important trends is its use in industry to improve the effectiveness of breaking down the most diverse materials. For example, our institute, jointly with the Yuzhgiprotsement [State Institute for the Planning of Cement Plants in the Southern Regions of the USSR], has proposed the procedure of very fine pulverization of cement by cooling with liquid nitrogen. Under such conditions, we succeed not only in obtaining high-quality cement, but with the aid of the nitrogen atmosphere, in protecting it from saturation by moisture from the air. The UkrSSR Ministry of the Construction Materials Industry has taken an interest in the procedure, and has designated it for introduction at a large plant in Balakleya.

Liquid nitrogen also has the long-term function of making considerably easier and reducing the cost of processing metal scrap, since the varying degree of embrittlement of different materials at low temperatures makes it possible to easily classify steel, nonferrous metals, and so forth. The use of liquid nitrogen for processing and recovery of old vehicle tires is very beneficial; granules suitable for various purposes have been obtained. In pharmacology—in obtaining very fine powders for medicines—the use of liquid nitrogen also yields a good result: because of the cooling, the finest particles do not stick together, which protects the preparations from undesirable effects.

All these examples graphically demonstrate that we must shift from experiments to broad use of liquid nitrogen in the most diverse sectors. This will bring considerable gains to the national economy and will be conducive to further improvement in the welfare of the Soviet people.

Mass Production Needed

Moscow IZVESTIYA in Russian 19 Feb 81 p 2

Article by special correspondent V. Romanyuk: "Refrigerator on Wheels"

Text The organization of the mass production of refrigerated trucks will help to incorporate additional reserves in implementing the five-year plan's food program.

In the harvesting season in the fields and orchards there is hardly a concern as important as protecting the crop and shipping it on time. Especially at that time, the refrigerated trucks—these "refrigerators on wheels"—have a great deal of work: bringing the early vegetables, then sour and sweet cherries, plums, berries—the generous gifts of the land—to citizens' tables. However, there is enough work in other seasons as well; and today nimble LIAZ's [vehicle from Lutsk Motor Vehicle Plant] and sturdy PAZ's [vehicle of Pavlovsk Bus Plant] speed along the roads and powerful ALK's [Czechoslovak vehicle] with brightly painted van surfaces rush past swiftly... But every year, even if the harvest is not very

abundant, far from everything grown in the orchards and fields reaches the consumer. One of the reasons is that the fleet of refrigerated trucks is very limited, and this subsector of vehicle manufacturing is being developed slowly, not meeting the requirements of the national economy.

At present, the country produces slightly more than 4,000 3-ton "refrigerators on wheels," and low-tonnage refrigerator trucks with a carrying capacity of 0.8 tons, as well as vans with isothermal bodies, are produced in small quantities. With regard to the more powerful 8- to 12-ton refrigerated trucks, our industry does not turn them out at all. The lag in trailer technology as a whole remains significant: instead of the norm recommended by the State Committee for Science and Technology—two to three semitrailers per truck tractor—those are being manufactured today in a ratio of approximately one to one.

Refrigerated trucks and vans with isothermal bodies occupy a very modest place in the system of enterprises of the Ministry of the Automotive Industry. True, it is scheduled in motor vehicle manufacturers' plans to begin output of refrigerated trucks based on the ZIL [made by Moscow Motor Vehicle Plant imeni Likhachev] and the KamAZ [made by Kama Motor Vehicle Plant], as well as a 20- to 21-ton "refrigerator on wheels" based on a three-axle Minsk tractor. But these are plans; today there are not even enough designs worked out, and those vehicles being imported—Czechoslovak ALK's and Skoda's—basically handle international transit shipments.

But why has this important subsector of specialized motor transport turned out to be a stepchild? As far back as 1977 the Ministry of the Automotive Industry was charged with preparing capacities to turn out an 8.5-ton refrigerated truck based on a ZIL tractor and a 12-ton refrigerated semitrailer based on a KamAZ tractor. A program to produce 2,500 refrigerated semitrailers annually was assigned to the Krasnoyarsk Truck Trailer Plant. However, the terms for establishing the capacities were disrupted.

"Based on an evaluation of the status of capacity construction and real opportunities for production, the conclusion must be drawn that the Krasnoyarsk Truck Trailer Plant will not be able to turn out one refrigerator in the present five-year plan," states L. Pobedonostsev, chief specialist of the USSR Gosnab administration for supply and intersectorial ties for machine building products. "An alternative is being worked out which calls for development of refrigerator production in Moldavia. Here the output of 1,000 refrigerated trucks annually can be set up in relatively short periods of time and with minor capital investment."

There is not one specialized enterprise in the country today for the production of refrigerated trucks. Capacities available in the motor vehicle industry are being developed extremely slowly. As an example, the Lutsk Motor Vehicle Plant and the Gor'kiy Special-Purpose Motor Vehicle Plant are manufacturing as many refrigerated trucks and vans for shipping perishable products as they turned out in 1980. True, the Baku Special-Purpose Motor Vehicle Plant will double the output of refrigerated trucks, but this doubling is of last year's level, and it has amounted to only several hundred units in all. The needs of the national economy require an increase many times greater.

Speaking about the food program of the 11th Five-Year Plan, Comrade L. I. Brezhnev emphasized that it should unite together the problems of developing agriculture and the industrial sectors which serve it, procurements, storage, transportation and processing of agricultural products, and problems of developing the food industry and trade in foodstuffs.

"The ideal situation is when the fruit harvested in the field is loaded right here into a refrigerator and goes to the store or storage without transshipment," says M. Dorofeyev, chief of a department of the Horticultural Administration of the USSR Ministry of Agriculture. "But there are not enough refrigerated trucks and packing materials for loading, and the transportation base is inefficient. After all, cherries will start to rot already after lying for a day. This is the cause of spoilage and losses..."

A lively response from readers gave rise to a letter from a group of workers of the Strashenskiy vehicle depot of the Moldplodovoskhcheprom Association (IZVESTIYA, No 25). Motor transport workers cited the reasons why they are carrying less vegetables and fruits than they could: an old fleet of refrigerated trucks, insufficient spare parts, poor service on interurban routes. "Of course, it is a shame when part of the vegetables and fruit spoil before they are unloaded," writes N. Tarasov from Kalinin on this subject. "But it is doubly disappointing and disgraceful when a Moldavian refrigerated truck breaks down near Kuybyshev and waits several days for an insignificant part from its vehicle depot. You can imagine the condition in which the berries and fruits will reach the consumer. Spring is not far off, and with it will come early vegetables, then berries. Will it again turn out that sweet berries reaching our table will taste bitter?"

Improvement in the structure of the motor vehicle fleet and an increase in the production of refrigerated, special-purpose, and low-tonnage vehicles has been stipulated in the plan of the Basic Trends. In addition to what has been written in the plan, readers consider it important to provide for the organization of mass production of domestic refrigerated trucks, to improve the provision of specialized interurban vehicle depots with the necessary spare parts and assemblies. Engineer A. Ros' from Zaporozh'ye suggests that new designs be worked out in the 11th Five-Year Plan and that series output of special-purpose vehicles for shipping products be organized.

In a discussion of the problem, P. Sklyarov, deputy chief of the Economic Planning Administration of the USSR Ministry of the Automotive Industry, complained about the limited nature of capacities to turn out refrigerated trucks and generally agreed with the view of readers who propose a provision in the 11th Five-Year Plan for construction of a specialized plant to manufacture refrigerated trucks. However, as they say, the matter "remained undecided" when the discussion came to who should take upon himself all the trouble.

"Our ministry specializes in trucks and passenger cars," he says. "We are not specialists in refrigeration equipment. Let the specialists concern themselves with this matter."

But after all, the Ministry of Chemical and Petroleum Machine Building, which is turning out refrigeration units, is not a specialist in the motor vehicle business. So what do we do, create a new department? Of course not. It is quite different; one must engage in solution of the problem more energetically, without setting hopes on someone who will agree to assume another's burden. We must more efficiently utilize capacities and resources, redistributing them in accordance with the requirements of the national economy.

Yes, we have a great need for Zhiguli's and Moskviches to sell to the people. But readers reasonably raise the question of whether it is necessary at the present stage to assign priority to this requirement when the shortage of specialized truck transport for the purpose of meeting the needs of the food program are more and more critical. Is it not worth it to channel funds earmarked, let us say, for rebuilding the Moscow Motor Vehicle Plant imeni Leninist Komsomol in this five-year plan to establishment of capacities to turn out refrigerated trucks and low-tonnage vehicles? Both specialists and readers see a substantial reserve for increasing output of low-tonnage trucks—for procurement officials, for trade, for consumer cooperatives—in a reorientation of part of the available capacities for passenger car and other vehicle manufacturing. Certainly there is reason for planning organs to examine the problem from these positions as well. The matter is worth it.

A little more than 44,000 low-tonnage trucks are being turned out in the country annually. The demand is significantly higher. After all, for example, products for school canteens and other small eating places in rural localities are now being delivered by heavy trucks. In the 11th Five-Year Plan, it is planned to begin turning out low-tonnage electric trucks for intracity shipments. These long-range developments must not be permitted to be pushed into the background.

The Tsentrosoyuz Central Union of Consumers' Cooperatives, for example, is experiencing many difficulties with refrigerated truck transport. Its cooperative freight turnover during the past 10 years has increased by 60 percent. But at the same time, the amount of transportation earmarked for cooperatives has been cut in half. The situation is further complicated by the fact that general-use motor transport organizations, because of the low profitability of shipments caused by the sparseness of roads and the inconstancy in time and tonnage of the freight flow, often refuse to serve consumer cooperatives. In all, about 10 percent of the cooperatives' freight is carried by this form of transport. And the Tsentrosoyuz fleet of refrigerated trucks consists basically of obsolete vehicles. The lack of transportation affects the volume of people's purchases of vegetables and fruit and gives rise to justifiable criticism of the lateness in receiving a crop that has been harvested.

"The Tsentrosoyuz has only 1,860 refrigerated trucks," says V. Kuznetsova, deputy chief of the transport administration. "This is for 2,600 rayons in the country where we purchase various products. We have not received any heavy refrigerated trucks at all in recent years. Of course, this limits our capabilities. As an example, in 1981 members of cooperatives have the opportunity to purchase from the people 8.2 million tons of fruit, vegetables, berries and other products, having provided for an increase of 2.8 million tons compared with last year's

level. However, in order to ship just this increase in procurements—and shipment often must be made from remote areas for great distances—an additional 7,000 vehicles will be required, including 1,200 refrigerated trucks or vans with isothermal bodies. For the five-year plan as a whole, taking into account the increased procurements of perishable products, the Tsentrosoyuz requirement for "refrigerators on wheels" amounts to about 7,700 transport units. In the situation which has developed, we must use unpractical motor transport, even simply cartage."

What is more, the available fleet of refrigerated trucks is not being used in the best manner. Improvement in the efficiency of its operation is poorly motivated. The Administration for the Organization of Agricultural Shipments of the RSFSR Ministry of Motor Transport has 1,000 to 1,100 refrigerated trucks on lines. This, of course, is not enough. But when I asked G. Dolgachev, the chief of the administration, about the real requirement, he stated in plain terms that no one knows the actual requirement. Every year the volume of procurements is determined and the distribution of fruit and vegetables by regions is known, but there is no precise target of the quantity which should be shipped out from the south by motor transport. "For the present, we ship less than 100,000 tons per year," explained G. Dolgachev, "but we also could deliver 200,000 tons of fresh vegetables and fruit."

Such a situation, of course, disenchants the transport workers. Incidentally, in the opinion of specialists, motor transport successfully competes with rail transport for up to 1,200 kilometers, releasing the steel mainlines for other urgent national economic freight. The refrigerated truck also has a number of advantages: it can be loaded directly in the field without additional transshipment, and does not require, like the five-car refrigerated section, an accumulation of freight during which losses of part of the product are inevitable.

At the USSR Gosplan, I had occasion to hear contradictory opinions about which form of refrigerated transport—motor vehicle or rail—ought to be given preference for development. It appears that, all the same, it is impossible to agree with those who, in counting on fuel savings with rail shipments, have no objection to slowing down development of refrigerated truck production. By winning in one, we lose in the other—providing the people of the country with fresh high-quality fruit, succulent and fragrant gifts of the orchards and fields. And that task is paramount.

Gosplan Followup

Moscow IZVESTIYA in Russian 18 Jul 81 p 2

Article by correspondent V. Romanyuk: "More About the Refrigerator on Wheels"

Text The question under discussion in the article "Refrigerators on Wheels" (IZVESTIYA No 41) concerned the reserves to carry out the food program which can be put into effect after organizing mass production of refrigerated trucks. It is not enough to raise and harvest the gifts of the bountiful land; it is important to preserve and deliver the crop to consumers safely. Over the last five-year plan, as noted at the party's 26th congress, the average annual per capita consumption of vegetables and fruit increased more slowly than their production. Losses had a substantial influence on this statistic.

The newspaper's article was discussed at the USSR Gosplan. In a response signed by V. Selifonov, chief of the Department of Motor Vehicle, Tractor and Agricultural Machine Building and Machine Building for Livestock Raising and Fodder Production, it states that while production of 9,600 units of refrigerated trucks and vehicles with isothermal bodies is being planned in 1981, it is being projected in calculations for the plan to produce only 13,000 units of such vehicles with a carrying capacity of up to 5 tons in 1985. Let us say frankly that these rates will not be able to meet the requirements of a developing agro-industrial complex.

Here is what P. Volkov, USSR deputy minister of the fruit and vegetable industry, reports. The present five-year plan specifies that the volume of deliveries of fruit and vegetable products for the country's use is to be increased and brought up to 8 million tons. At the same time, the increase in the volume of shipments falls chiefly on motor vehicle transport.

The Ministry of the Fruit and Vegetable Industry has outlined a number of measures for better utilization of the available specialized rolling stock, as well as for further development of the network of motor vehicle enterprises for the organization of shipments of fruit and vegetables from the Moldavian, Azerbaijan and Uzbek SSR's and regions of the Northern Caucasus to the country's industrial centers. At present, the Ministry of the Fruit and Vegetable Industry is using more than 2,000 refrigerated trucks in the system. In order to ensure delivery of the increasing volume of vegetable and fruit produce, according to the ministry's estimates, it will be necessary to increase the fleet of refrigerated vehicles up to 9,000 units in the current five-year plan. "In this connection," writes P. Volkov, "we would consider it advisable to organize for 1982-1983 the output of no less than 3,000 units of refrigerated semitrailers annually, which will make it possible to more fully meet the people's demands for early vegetables and fruits by accelerating the periods of time for delivery and reducing losses in shipments."

Deputy Minister of Agriculture N. Stolbushkin informs the editorial staff of the unsatisfactory provision of "refrigerators on wheels" for rural workers. Agriculture's estimated requirement for refrigerated trucks, based on the annual volumes of shipments of early vegetables, fruit, berries, grapes, meat, milk and other perishable freight, amounts to 19,700 tons. However, the orders for these means of transportation are not being met from year to year. So agriculture's order for 1981 consists of 1,100 refrigerated trucks, but the plan for delivery is just 558 units, which is obviously inadequate.

And here is the refrigerated truck situation which has taken shape in consumer cooperatives, which purchase agricultural produce from the people. G. Pykhtunov, chief of the transportation administration of the Tsentrrosoyuz [Central Union of Consumers' Cooperatives], told the editorial staff that consumer cooperative organizations' requirement for refrigerated trucks with a carrying capacity of 12 tons amounts to 480 units annually.

The vehicles received by consumer cooperatives over the past 5 years only cover the inventory of vehicles required for 1 year. Meanwhile, cooperative members have the opportunity this year to purchase from the people 2.8 million tons of fruit, vegetables, berries and other products more than last year. In order to ship just this increase, an additional 1,200 refrigerated trucks or vans with isothermal bodies are required; for the five-year plan, taking into account the increase in procurements of perishable products, 7,700 "refrigerators on wheels" will be required.

But since the increase in the fleet of refrigerated trucks lags behind the increase in demand, unpractical transportation—trucks and even carts—must be used in shipping fruits and vegetables, which results in produce losses. The experience of many years in delivering these products from rayons of the Northern Caucasus to Moscow, Leningrad and other industrial centers indicates that shipping them in refrigerated trucks is the most expedient—the period of time does not exceed 72 hours, and the quality of the produce is preserved at a high level. In 1980, the volume of such shipments reached 93,000 tons. "In the opinion of the RSFSR Ministry of Motor Transport," Deputy Minister N. Nikanorov writes the editorial staff, "the delivery of vegetables and fruit could be significantly increased even in 1981, both by increasing shipments of fruit and vegetables from the Northern Caucasus regions as well as by organizing shipments of tomatoes from Astrakhanskaya and Volgogradskaya Oblasts. However, the RSFSR Gosplan is not planning these shipments. The corresponding increase in the fleet of heavy refrigerated trucks has not been planned, either."

Just what is being undertaken to resolve this important problem? The task has been placed directly before the USSR Ministry of the Automotive Industry in the Basic Trends for the Country's Economic and Social Development: to expand the production of refrigerated trucks, trailers and semitrailers, and specialized transport for the delivery of goods for public consumption. In a response signed by V. Korovin, chief of the Enterprise Planning Administration of the USSR Ministry of the Automotive Industry, he admits that the article "Refrigerators on Wheels" correctly indicates the lag which has developed in the output of refrigerated trucks. But what conclusions are drawn from this by those who write responses to the editorial staff? That neither the Ministry of the Fruit and Vegetable Industry nor the Tsentrinosoyuz will receive any domestic heavy refrigerated trucks in the current five-year plan, because only the capacities are being established in this five-year plan, while production will actually appear in the next five-year period.

Well, what is happening with production of refrigerated trucks at the Krasnoyarsk Truck Trailer Plant on which so many hopes had been pinned? Much time has been spent on remodeling the design of the plant which, under the original plan, was to have made tractor trailers as well; there also has been much vagueness about the design of the refrigerated truck itself. But not everything is well with the refrigerated semitrailer with a load capacity of 11.5 tons for the KamAZ [Kama Motor Vehicle Plant] truck tractor, either. Completion of the acceptance tests and submission of technical specifications in preparation for production are planned for 1983, but output of the first industrial series will be in 1984, with the beginning of series output in 1985. However, as V. Shurinov, the plant's chief engineer, writes, preparation for production is being held up because of

the lack of technical documentation and may be completed no earlier than in 1984 (the SKB [special design bureau] of the Odessa Motor Vehicle Assembly Plant is developing a model of the refrigerated truck).

A comprehensive description of the situation which has developed is contained in the response from the State Scientific Research Institute of Motor Vehicle Transportation (NIAT) which was signed by V. Ivanov, director of the institute and doctor of technical sciences. It states that the quality and operational characteristics of the refrigerated trucks being turned out in the country do not correspond at all to operational requirements; the product list of refrigerated trucks and semitrailers needed for the national economy, which includes seven models, was determined a long time ago and included in the standardization of specialized rolling stock, confirmed by new standardization for the period up to 1990, but the plan for developing production of refrigerated trucks is not being fulfilled for one model. Meanwhile, the demand for increasing the output of "refrigerators on wheels," as well as for light trucks, is becoming more and more acute.

Production of refrigerated trucks with a load capacity of 2.5 tons has been organized at the newly established capacities of the Baku Specialized Motor Vehicle Plant. Output of refrigerated trucks with a load capacity of 0.8 tons will begin at the Yerevan Motor Vehicle Plant in 1983. However, the planned volume of increased output of such necessary equipment is not high at either enterprise.

The lag in developing production of refrigeration units, which the Ministry of Chemical and Petroleum Machine Building has been charged with delivering, is worrying motor vehicle manufacturers. G. Shein, deputy minister of chemical and petroleum machine building, sent a response from which it appears that 2,600 cold storage units for refrigerated trucks with a load capacity of 2 to 5 tons will be built in 1981. Beginning in 1982, output of units with improved technical and economic features is being planned; measures are being taken to increase the output of cooling machinery for refrigerated trucks, for which the establishment of additional capacities has been stipulated in the 11th Five-Year Plan. But from the response it is not clear whether the program outlined will meet the requirement for developing the production of "refrigerators on wheels."

With the aim of providing transport for the increasing number of deliveries of fresh vegetables, fruit and grapes to the country's industrial centers, leading organizations in the Moldavian SSR have appealed to national organs with the request to review the matter of building an enterprise in the republic to produce heavy refrigerated trucks at the base of the Tiraspol' Truck Trailer Plant of the USSR Ministry of the Automotive Industry. Here they intend to turn out 1,000 units of truck trailers with a load capacity of 20 to 22 tons annually for the truck tractors of the Minsk Motor Vehicle Plant. In reporting this to the editorial staff, P. Shapa, deputy chairman of the Moldavian SSR Council of Ministers, also indicated in his response that construction of a plant to repair refrigerated railway rolling stock is being planned in Moldavia.

However, all these half-measures do not resolve the problem as a whole, of course. As Comrade L. I. Brezhnev pointed out at the party's 26th congress, the volume of output produced by agriculture today makes it possible to appreciably improve the supply to the people of many forms of foodstuffs. Large losses impede solution of this task. For this reason, in continuing to increase production of vegetables and fruit, it is necessary to improve their transportation, storage and processing. In that way, organization of the production of "refrigerators on wheels" of all types becomes an important component part of the food program of the 11th Five-Year Plan. More fully providing the country's people with the succulent and fragrant gifts of the orchards and fields is a task of paramount importance. And the refrigerated truck is irreplaceable in resolving this without unnecessary transshipments—after all, it can go directly into the field; it does not require accumulation of a large quantity of fruit, and preserves the palatability of the produce for a long time. Is it not time to take more decisive measures to organize mass production of "refrigerators on wheels" without limiting ourselves to a statement of present difficulties?

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RAILROAD

IMPROVEMENT SOUGHT IN KAZAKHSTAN RAILROAD TRANSPORT

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 1, 1981 pp 18-20

[Article by N. Isingarin, chief engineer of the Tselinna Railroad: "Problems Requiring Urgent Solution"]

[Text] We know that railroad transport has experienced great difficulties in recent years. Operating under enormous stress, this transport is not always successful in providing for rapid and efficient delivery of national economic freight. And this in turn is having an unfavorable effect on the development of the country's economics.

The draft of the "Basic Directions" therefore maps out large-scale measures for the further development of railroad transport. Provision is made for technical retooling, for further stepping up of the carrying and traffic capacity of the railroads on the busy freight lines, for increasing the capacities of the railroad stations and junctions, and for reinforcing the repair and construction base.

There is a special urgency in the measures planned by the party for the Tselinna Railroad.

In rates of increase of shipment volumes the Tselinna main line has no equals among any of the other of the country's railroads. Thus, in the last five years alone the volume of freight shipped increased almost 1.5-fold, the volume of freight turnover by 21 percent, and the proportion of this road's transport in the overall Union railroad freight shipments by 2.7 to 3.85 percent.

These rates of increase of the volume of shipments will be maintained in the next 10 years as well. This is the result primarily of the rapid development of the Pavlodar-Ekibastuz, Karaganda-Temirtau, Kustanay and other territorial production complexes of the republic. It is also the result of the increased production of agricultural output. We estimate that in 1985 shipment of freight will exceed today's level by 50-55 percent.

Freight turnover will also show high rates of growth. This basic indicator of the transport work of the railroad is derived from the ton-kilometers of transit freight carried and the shipments within the railroad. We made reference above to the rates of growth of this latter category of shipments--these rates are high. Now a few words on transit shipments.

In the period of the 10th Five-Year Plan the amount of transit flow was approximately one-third of the total volume of work. We expect this figure to increase in the future, primarily by virtue of a fuller load for the Central Siberian line.

Thus, in the forthcoming years the railroad workers of Northern Kazakhstan will have to handle sharply increasing volumes of shipments. This, of course, requires building up the traffic and carrying capacity of the Tselinna Railroad and developing all the links of the complex transport operation. A great deal has already been done in this regard. In recent years the Ministry of Railways USSR has allotted considerable amounts of capital investments. Allocated for use within the confines of the Tselinna Railroad are 260 million rubles, including 240 million by the subdivisions of the Ministry of Transport Construction USSR.

Great tasks lie ahead for the construction people in the 11th Five-Year Plan. They must put enormous capital investments into operation and they must fulfill construction and installation work in considerably greater volumes than in the past five-year period. In 1981 the volume of this work will already be 40 percent greater than in 1980. And this is where we run into the first problem--the inadequate capacity of the subdivisions of the Ministry of Transport Construction--our chief contractor. Now in operation on the railroad are four general transport construction trusts: the Tselinna trust Tselintransstroy, the Pavlodar trust Pavlodartransstroy, the Magnitogorsk trust Magnitogorsktransstroy, and the Kokchetav trust Kokchetavtransstroy, which was set up last year.

The inadequacy of these subdivisions is demonstrated by the following fact. In the 1977-1979 period their fulfillment of the plan for construction and installation work was on the 87-93 percent level and during the three years they fell 18 million rubles short of putting the full amount of the investments into operation.

To enable these trusts to handle the drastically stepped up program we believe it necessary to establish about 11 new construction-installation trains of the general type as well as specialized subunits for fulfillment of excavation and sanitary engineering work.

Additional trusts are needed for Kustanay and Ekibastuz. However, we understand that it will be difficult to staff these with personnel--the regions of Northern Kazakhstan are experiencing a shortage of labor resources. It is therefore necessary to establish a rate for the mobile subunits and to send them to us.

Within its capacities the Komsomol can help in resolving the personnel problems if it assumes responsibility over the reconstruction of the most important transport artery--the Central Siberian main line.

Further. Productive activity on the part of all the construction organizations requires a dependable production base. There is need to build a reinforced concrete products [ZhBl] plant in Tselinnograd and to set up bases with ZhBl plants and repair shops in Kokchetav, Ekibastuz and Kustanay as well as standard bases for construction and installation trains.

The buildup of the capacity of the construction subdivisions must be accompanied by implementation of the measures mapped out by the CPSU Central Committee and USSR Council of Ministers decree calling for improvement of the economic mechanism. The

work of the construction people must be evaluated for a specific transport construction job--the complete stretches of secondary tracks, the new lines for the contact network and the capacities put into operation for the new enterprises and social-purpose installations put into operation. This will place a special responsibility on both the customer (the railroad) and the contractor (the transport construction units).

Another serious problem on our railroad is the lagging of the base for repair of the technical facilities. To illustrate this, let's take, for example, the preparation of the cars for loading.

Everyone knows that before a car is loaded it must be made technically serviceable. Since the Tselinna Railroad loads a great deal more than it unloads, the volume of its repair work is very large (we estimate that for every open car unloaded on our railroad there are two cars which have come in as empties from adjacent roads; these we are also obliged to prepare for loading).

The regulations require that every mass loading station have a yard for clearing the freight debris from the cars, tracks for current coupling repair with the appropriate mechanisms, and an open shed or depot for coupling repair with specialized equipment. In short, every preparation point must constitute a small but technically well equipped enterprise.

As it is, there is nothing of this nature at such large loading stations as Zhelezorudnaya, Arkalyk, Maylino and others. Cars are prepared for loading by primitive methods. It's true that at Ekibastuz they will soon put into operation an open point for current coupling repair. But, unfortunately, there is just this one example.

It was noted above that the USSR Ministry of Railways is allocating large amounts for the development of the Tselinna Railroad. At the same time, it cannot be overlooked that this development is a one-sided affair. In some sectors of the road the track operation is being intensified but other important installations are not being built. For example, they have been dragging their feet with the planning and construction of a new locomotive depot in Kokchetav and there are not enough bases for the track sections and the track machine stations, not enough repair shops for the signalling and communications sections, not enough power sectors, etc. These installations do not require large capital investments but it is because of the lack of them that we are getting a smaller yield from the many hundreds of millions of rubles invested in the main line railroads.

Uninterrupted transport service depends not only on the level of development of the railroad mainlines but also on the extent to which the transport shops of the industrial enterprises adhere to the requirements for their basic production. We should note in this connection that on the Tselinna Railroad 90 percent of the loading and 50 percent of the unloading has to be done immediately on the approach tracks of the plants, mines and pits. To give you an idea of the impact of the final operations on the effectiveness of the use of the rolling stock, we will say that in 1980 alone exceeding the norms for layover of cars led to a loss of nearly 60,000 cars, which could have served to load 3.7 million tons of freight.

In the 1970's the ministries and departments implemented hundreds of measures aimed at further development of the technical equipment for the transport shops, expansion of the loading and unloading fronts, and mechanization of these operations. As a result, despite the increased volume of work on the approach tracks, for more than one-third of the layover of the cars we were able to effect a reduction of .4 hours.

However, in this regard two important problems remained unresolved. Let us dwell on these in more detail.

In the Ninth Five-Year Plan it was recognized as desirable to bring together in a single enterprise of industrial railroad transport (PPZhT) the less busy approach tracks and their service facilities, which were under dozens of individual owners and were therefore being used with a low level of efficiency. In 1975 the CPSU Central Committee approved the work of this type of enterprise in the city of Elektrostal' (Moscow Oblast). The decree which was adopted emphasized the fact that the setting up of large intersectorial industrial railroad transport enterprises in the national economy is an important and economically advantageous undertaking. As compared to the small departmental transport shops, the combined organizations are increasing the productivity of the locomotives and cars several times over, are giving us a significantly lower cost of shipments, and are speeding up the delivery of freight to the consumers.

The republic has repeatedly reviewed this problem. Thus, the Kazpromtransproyekt [Kazakh Industrial Transport Planning Institute] twice (in 1968 and 1972) made a study of the status of transport for the republic as a whole and for the various industrial regions and it analyzed the forms of transport service which have evolved in the enterprises. The institute came to the conclusion at these times that it was necessary to concentrate the technical facilities and to set up intersectorial transport organizations. The economic advantage of the PPZhT organization was confirmed in nine of the 27 industrial centers surveyed. Dozens of new enterprises and organizations with approach tracks have appeared in all of these regions in recent years and today it is possible to set up unified railroad organizations in them. On Tselinna Railroad this can be done at Kustanay, Arkalyk, Atbasar, Kokchetav, Tselinograd (station Sorokovaya), Yermak and other large industrial centers.

As it is, in the 10th Five-Year Plan the republic did not set up a single enterprise of this kind. As we know, the Ministry of Railways USSR organized a main administration of industrial railroad transport to which the network of Ukrainian and RSFSR territorial associations and enterprises were subordinated. In our republic the industrial transport enterprises now in operation have been lagging in the matter of subordination to sectorial ministries and departments. In practice further solution of this problem is dependent on the Ministry of Railways USSR.

Another problem is that of stepping up the level of the extent of technical equipment of the transport shops and approach tracks of the industrial enterprises. It is this factor which determines the reliability and regularity of the transport service and the effectiveness of the use of the rolling stock.

A good example of this regard is provided by the collective of the Sokolovsko-Sarbayskiy Mining and Concentrating Combine. Having, together with the railroad workers of the Kustanay branch of the road, taken the initiative in cutting down the layover times for the rolling stock on the approach tracks, the mining people have done a great deal to step up the technical level of the transport shops. In the combine they have not only successfully implemented all the planning decisions with respect to the approach tracks but they are also constantly strengthening their traffic and carrying capacities and expanding their loading and unloading fronts.

To sum up, in recent years the mining people have been able to cut the layover times of the cars in half. This initiative was commanded by the Central Committee of the Communist Party of Kazakhstan and the work was recommended as worthy of widespread emulation.

But there are also examples of another kind. Thus, in 1978 the Pavlodar Oil Refinery went into operation. The improved equipment and progressive technology entitle this enterprise to be categorized as modern. But the overall good picture is spoiled by the railroad approach tracks. At Station Zavodskoy, instead of main-track switches, they have installed switches of the industrial type. They've also failed to put in electric centralization and the switching is being done manually. Because of the poor track maintenance and the inadequate development of the station, the switching operations are carried out at limited speed. And technological loud-speaker communications have not been installed. And, of course, they have not even built a service building for the railroad workers. In short, the basic production is suffering--the transport of oil and petroleum products is being hampered.

When the second section of the plant is put into operation, railroad car turnover on the approach track will double. The situation will become critical. The management of the enterprise has apparently begun to equip the plan in the way that the plan calls for.

It should be noted that there is quite a large number of instances of an indifferent attitude toward the development of the transport shops. An especially poor regard for the approach tracks has been shown by the enterprises of the republic's power ministry. For example, in Tselinograd the TETs-2 was turned over for operation. It is hard to say how the railroad workers have managed to deliver cars with coal along tracks which adjoin dozens of approach lines of other enterprises. They are progressing at very slow rates in building the siding from Sorokovaya Station provided for by the plan.

Little has been done in the matter of the transport lines from the Ekibastuz GRES. There are many unresolved problems. Let us consider the problems of a technical nature.

We recall that in the beginning the first planning decisions regarding the Ekibastuz line were reviewed back in the 1966-1967 period by the administration of the former Kazakh Railroad and the Ministry of Railways USSR. At the time Ekibastuz did not have such enormous national economic importance and the amounts of coal it shipped were only 1/5-1/6 of the amounts being shipped now. It was believed that the

technical equipping of Stations Ekibastuz I and Ekibastuz II would take care of delivery of fuel to GRES-1 (the sites of the other GRES were only just taking shape). However, by the end of the Ninth Five-Year Plan period the requirement for energy coal had already increased sharply and the rate assigned for its extraction and shipment was such that the railroad transport was unable to handle the flow of coal.

In all fairness we will say that at first many of the consumers of the fuel were disturbed by this. Thus, the Novosibirsk branch of the Teploelektroproyekt [All-Union State Institute for the Planning of Electrical Equipment for Heat Engineering Structures] and the management of the GRES installations under construction included in their first-priority work projects the laying of additional lines at Station Ekibastuz I and the construction of a siding connecting this station with the approach tracks of GRES-1. But then, for some unknown reasons, they all turned their backs on the solution of the transport problems. When, for example, the technical plan for GRES-2 was approved, they simply omitted the section "Foreign Transport," which provided for the development of Station Ekibastuz II to accommodate a volume which will enable them to handle the flow of fuel to GRES-2.

The Eibastuz fuel and energy complex is just in the process of being formed. Whether it will operate efficiently or experience difficulties depends largely on the level of development of the railroad transport.

To increase the effectiveness of the industrial railroad transport it is extremely important that its work be organized on the basis of a unified technological process jointly with the stations of the MPS [Ministry of Railways].

The problems we have discussed in this article are today paramount. They must be resolved without any delay and without any narrow departmental approach. The republic's ministries and departments and the USSR Ministry of Railways must find the optimum variants for solution of the transport problems so that, as Comrade L. I. Brezhnev pointed out at the November (1979) plenum of the CPSU Central Committee, we can prepare a long-term, comprehensive program for the development of transport. In turn, the collective of the Tselinna Railroad will do everything in its power to provide for the republic's economic requirements for freight shipments.

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7962

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RAILROAD

RESULTS OF RAILROAD WORK COMPETITION ASSESSED

Moscow GUDOK in Russian 6 Jun 81 p 1

[Editorial: "Increased Loading--in the Railroad Cars Saved"]

[Text] There has now been one month of competition started on the initiative of the Moscow-Ryazan' section. The collectives of the advanced subdivisions have been trying to expedite railroad car turnover, to increase the static load of the rolling stock, and to find new ways to achieve rapid movement of the trains through the sections. In May the plan for loading was overfulfilled.

The Sections Compete

Having assumed a labor watch in honor of Railroad Workers' Day, the workers of many lines are trying to find reserves for stepping up shipments.

The

The Pacesetters

[Section, Railroad]	Section Chief and Rayprofsoz [Rayon Committee of the Railroad Transport Trade Union] Chairman	Railroad Cars Saved by Speeding up Car Turnover (average per day)
Aban, Krasnoyarsk RR	M. I. Tychko V. L. Larionov	2314
Omsk, West Siberian RR	R. A. Bikbavov A. V. Safronov	1846
Rostov, North Caucasus RR	A. I. Yeroshenko A. Ye. Solomatin	1824
Krivorozhskiy, Pridneprovsk RR	I. I. Vasilenko A. G. Demyanenko	1694
Novosibirsk, West Siberian RR	V. F. Zayko A. T. Tyurin	1437

[Section, Railroad]	Section Chief and Rayprofsozhh [Rayon Committee of the Rail- road Transport Trade Union] Chairman	Railroad Cars Saved by Speeding up Car Turnover (average per day)
Karasuk, West Siberian RR	K. L. Nikolaychuk N. V. Borzov	1065
Belovo, Kemerovskaya RR	A. M. Koryachkin A. G. Barsukov	1038
Kuybyshev, Kuybyshevskaya RR	V. I. Klinskiy M. F. Ishchenko	741
Odessa, Odessa RR	N. M. Kravchenko V. K. Shimanovich	729
Moscow--Ryazan', Moscow RR	V. K. Belenov L. S. Fedorov	545
Kherson, Odessa RR	F. F. Chernyuk Ts. Ye. Dzhalov	364
		Total 13,597

These collectives increased the rates of release of cars and in May overfulfilled the norm for their turnover as well as the plan for loading. Especially noteworthy were the successes of the workers of the Abakan, Belovo and Moscow--Ryazan' sections. They made effective use of the rolling stock, moved the trains at a rapid pace, and organized efficient work with the local freight.

In May many collectives accelerated the car turnover but still did not fulfill the norm. This was true, specifically, of the Saratov section. There they speeded up rolling stock turnover by 7.68 hours as compared to the corresponding period of 1980 and they freed additionally an average of 1468 cars a day.

The Laggards

[Section, Railroad]	Section Chief and Rayprofsozhh Chairman	Losses of Cars due to Slowness of Turnover (average per day)
Baku, Azerbaijan RR	S. G. Shikhiyev M. S. Guliyev	4,500
Izhevsk, Gor'kiy RR	V. S. Sivkov A. L. Yakobidze	1,230
Termez, Central Asian RR	A. I. Cherepanov Kh. K. Daminov	658
	Total	6,388

As is evident from the table, the losses are still very large. There is one trend we observe: that the gains made by the advanced collectives are lost by the lagging ones. The Baku, Kustanay and Izhevsk sections have become depositories for railroad cars. This is due also to the fact that the level of car turnover for the network of roads is the same as last year. There is a sizeable slowdown of rolling stock turnover in the Tyumen', Sol'vychegodsk and Semipalatinsk sections. And the lag has become chronic.

It is essential that effective measures be taken by both the railroad workers at the sites themselves and by the ministry. The editors will await from the executives of the sections and the MPS main administration a reply as to when and how the great car losses caused by the lagging of the collectives will be eliminated.

7962

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RAILROAD

BETTER PLANNING OF REFRIGERATOR RAIL CAR TRANSPORT URGED

Moscow GUDOK in Russian 7 Jun 81 p 2

[Article by Refrigerator Car Section Chief O. Gubarev and GUDOK Correspondent Ya. Zabara, Vladivostok-Ussuriysk: "The Refrigerator Cars are Running--The 26th CPSU Congress Decisions on the Practical Aspects of Route Shipments of Perishable Goods."]

[Text] To introduce advanced technology of transportation, storage, processing and sale of goods, modern trade and refrigeration equipment, and machine complexes and highly productive lines for the processing and packaging of goods.

From "Basic Directions of the Economic and Social Development of the USSR"

The Far East has long been considered the country's fish workshop. The products obtained here are shipped to all corners of the Union right up to the western borders. Shipped in the other direction are trains with fresh vegetables, fruits and berries.

The only trouble is the fish, the fruits and the vegetables traveling in the extra-long-distance shipments do not always reach the consumers in the same condition they were when shipped. Take fish, for example. They are transported by sea at a temperature of -20 degrees Centigrade but by rail on extralong-distance routes they are warmed up to -9 degrees. When they get into refrigerator trains, the fish thus gradually lose their qualities.

The same thing happens with vegetables and fruits. Try in the fall to buy a fresh, good bunch of grapes in Khabarovsk or Komsomol'sk-on-Amur, Vladivostok or Ussuriysk. The grapes are mangled. The local trade organizations are forced to spend a lot of time sorting the grapes. The losses entailed are enormous. Is this why in the Far East they are beginning to more and more frequently ship underripe, green fruits? The reasoning is obviously simple--there will be less waste.

The spoilage en route of high-quality food products inflicts enormous losses on the state because of this and the railroad people are to some degree to blame for it. Let us just begin with the average daily speed of the refrigerator trains. It is still very low. These trains sometimes travel with the speed of a britzka. The slow movement is the main reason not only for the spoilage of products en route but also the shortage of refrigerator cars. As a result, ships are constantly being

idled with tens of thousands of tons of freshly chilled fish. They remain idle waiting for refrigerator cars.

The refrigerator trains with their mild cooling marinating system and the five-car refrigerator sections with their single-stage cooling plants, as we know, cool the "hot" freight arriving directly from the orchards and kitchen gardens to temperature conditions which guarantee its safety for only three-four days. The time spent shipping the fruits or melons from the west to the east is five times greater than this norm.

They can argue this point with us but we venture to say that there really are sections of a past generation! Some of them do indeed meet all the requirements for extremely long-distance shipments! Yes, there are such sections but they rarely get to the lines to the Far East.

It would seem that the unusualness and complexity of shipments to the Far East (and one round trip of a refrigerator section on it is nearly equivalent to half a revolution at the equator) objectively dictate a nonstandard solution of the problems. Especially important is an effective system of planning and management of the movement of refrigerator cars. In the meantime, it does not look as if the project has been addressed with any degree of seriousness.

This can only be accounted for by sheer chance. For example, you very rarely have instances where some Far East refrigerator cars (in all cases we refer to cars of the refrigerator depot at Ussuriysk), after delivering fish products to Central Asia or the Caucasus, to the Ukraine or Moldavia and unloading in the same place at the unloading station or an adjacent one, then load for a shipment in the opposite direction.

It often happens another way. A refrigerator section crew from a depot in the European part of the country is sent on a long-distance routing to the shores of the Pacific Ocean and at a nearby station or a nearby branch of the same railroad waiting at the same time for the freight is the Ussuriysk section, which is more suited to the requirements of extradistance-shipments and has a more experienced crew.

But the branch which has acquired the Far East section will under no circumstance give it up to another branch. That would put it at a disadvantage. In the first place, there are never enough sections of empty cars and this would pose a threat of disruption of its loading plan. And secondly, does it mean an exchange of sections among the branches? No one was willing to take a step like this.

So, taking action which makes sense from the standpoint of the local railroad people and the local administrative organs, the Ussuriysk refrigerator sections break away from the system which takes care of Far East transport. In these sections you see them hauling freshly chilled fish from Sevastopol' to Taganrog or fruits and vegetables from Moldavia and the Ukraine to the industrial centers of the European part of the country as if it is impossible to ship this fish by sea and the vegetables and fruits by motor transport. It would also be simpler and cheaper.

They also run the Far East refrigerator cars along the Volga and other water arteries, where it would make more sense to transfer their freight to river transport and nevertheless shift the Ussuriysk sections, which are in such short supply, to the Far East lines.

Strange as it may seem, the existing system of planning does not make provision for determining in advance either the recipient's address or the station of destination and consequently the railroad personnel and the recipients do not always prove to be prepared to receive the freight. What follows are traffic jams which clog up the approach tracks and the stations. While waiting for unloading, the Ussuriysk crews burn diesel fuel to no purpose, their planned kilometers of run "evaporate," and their bonuses "vanish into thin air."

After unloading, the refrigerator sections are sent to the points for washing and equipping. And again the queuing up and again the idling. For days the sections are idle waiting for unloading requisitions and then for the unloading itself.

The movement of loaded refrigerator cars along the Trans-Siberian Railway is not organized in the best possible fashion. Neither the workers of the marshalling stations nor the dispatcher apparatus of the branches and roads have the slightest interest in speeding up the operation of these trains.

Is it any wonder after all this that there are not enough refrigerator sections and that turnover is too slow?

What is the solution?

This question gets a very precise and clear answer in the "Basic Directions of the Economic and Social Development of the USSR," as approved by the 26th CPSU Congress. The section "Development of Transport and Communications" states directly that it is essential "to step up the level and effectiveness of the routing of freight shipments and to build up the role of the schedule in the organization of the movement of trains."

We believe it is especially important to step up the level of the routing of extra-long-distance flow of railroad cars carrying perishable goods. The work can and must be done in such a way that refrigerator trains ply their routes from the Pacific Ocean to the western borders and back within minimum time limits.

7962
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RAILROAD

METHODS FOR TRAIN FORMATION DISCUSSED

Moscow GUDOK in Russian 13 Jun 81 p 2

[Article by GUDOK correspondent L. Bulankov: "The Plan for Formation of Trains--What the Specialists Believe It Should Be"]

[Text] The marshalling yards are referred to as both route factories and the heart of the steel main lines, which is a way of emphasizing the supremely important role they play in the freight shipment process. Some of the marshalling personnel are working at the limit of their technical potential. And in these very difficult conditions the situation is often complicated by the fact that in the arriving trains cars with another destination--"Foreign"--are seen. And this means the inevitability of additional shunting operations, repeated travel through hilly terrain, etc.

The marshalling yard is beginning to be feverishly busy. The fleet of cars is considerably in excess of the norm. The time of layover of the rolling stock is increasing. The normal rhythm of acceptance of cars is being disrupted and they have to be halted on the approaches. At times the work of an entire line is paralyzed.

All this is, of course, well known to the supervisors at Station Rtishchevo. And yet almost daily they ship in the direct trains headed for Kupyansk 10-30 cars each with freight for Bataysk. On the Azerbaijan Railroad loaded rolling stock is regularly placed on express trains of empty flatcars delivered in accordance with the regular assignment for the North Caucasus Railroad. On the West Siberian and East Siberian lines it is not considered shameful to "dilute" direct, even-numbered trains with individual cars of another destination. There are a great many such violations of the plan for forming trains.

Unfortunately, even this plan itself is far from perfect. It is compiled on the basis of the methodology worked out by the VNIZhT [All-Union Scientific Research Institute of Railroad Transportation]. I decided to talk to specialists who are thoroughly conversant with this problem. On the subject of improvement of this very important technological document here in brief is the thinking of Doctor of Technical Sciences Ye. Tishkin, chief of the computer technology department of the institute.

The use of EVM [electronic computers] for compiling the marshalling plan has made it possible to select the optimum variant of train formation. With manual

computation it was simply impossible to do this. But a machine is a machine. The accuracy of its calculations depends on the initial information fed to the machine. And some of the essential data we do not have at all while some other data cannot be considered reliable.

In the interrailroad shipments we do not know, for example, the unloading station. The data only gives the destination railroad, as for example, the Donets. And it gives several entry points but not one marshalling station. To which of them should the cars be sent to avoid an unnecessary run and additional processing? We don't know. In general, it turns out as in A. P. Chekhov's well-known story "Na Derevnyu Dedushke." And indeed until 1958 the MPS [Ministry of Railways] had available to it precise data on the stations of destination. But then this good procedure was abolished.

Also having an unfavorable impact has been the inadequacy of the so-called standard for flow of railroad cars. It was compiled back in 1969 on the basis of the results of an analysis of the transport work of the railroads in the preceding years. This standard has not been updated since then. And it was used in compiling the marshalling plan now in effect. What sort of accuracy could you have here! In the last 10 years quite a number of large enterprises have gone into operation. New cooperative links came into being. New freight traffic made its appearance.

Now as to the reliability of the norms. In preparing the marshalling plan the car-hours cited for accumulation and processing have been taken as constant amounts. This is a very crude assumption. Let us say a station has begun to receive less cars for a particular destination. It is quite evident that the time for their accumulation will increase. This means that this norm needs to be made dynamic, capable of changing in line with the amount of the flow of cars being processed.

Until now the calculations for the network and road plans have been carried out separately. And often the one plan was not coordinated with the other. For example, the network plan for some marshalling yard provided for an accumulation of cars for an assigned line. In practice it turned out that it was not for this route. The latter was already occupied with other flow as per the intraroad plan.

And how can we evaluate the quality of the marshalling plan? A precise evaluation is impossible. There are no generalizing indicators. In organizing the flow of cars they try to have the maximum number of trains go through the station without reprocessing. The coefficient of transit goods traffic is an important indicator. But it is far from all-embracing from a volume standpoint.

In the near future new instructional directives will have to be approved for the preparation of the marshalling plan. The specialists have been trying to eliminate many of the deficiencies mentioned above. They have stipulated how to take into account the calendar loading plans, the organizing of the circular routes, etc. And, what is extremely important, they have addressed themselves in clear-cut fashion to the matter of qualitative indicators for the marshalling plan.

Also in preparation is a new standard for the flow of cars. On the basis of the data of past years an optimum scheme for this flow is being compiled by means of EVM. Next year they will begin preparing a new plan for the formation of trains so

that it can be put into operation in 1983. This is a sizable and complex job. The program specialists have been doing painstaking work on it. This plan will embrace about 300 support marshalling yards instead of 170 as before. Finding the optimum variant for the marshalling plan requires the solution of a truly multivariate problem. The number of variants is expressed by a figure which it is difficult to even describe--2 to the 285th power!

The specialists believe that they will be able to obtain a more accurate distribution of the work load of the stations, significantly increase the transit capacity of the flow of cars, and reduce the cost of the shipments. It has become possible to eliminate many of the unnecessary layovers of railroad cars. The daily swing resulting from eliminating unnecessary processing of cars alone amounts to 25,000 car-hours.

Also being worked out is a system of automated monitoring of fulfillment of the plan for marshalling of trains. At designated points on the approaches to the marshalling yard they will organize an automatic compilation of the pertinent data--the number of the train, its composition, and a great deal more. This is so that precise information will come in ahead of time. It is planned to put this type of system into operation in 1983 for the busiest freight shipment lines.

Although the optimum plan for the formation of trains will facilitate the work of the marshalling yards, it will not, of course, solve all the problems. The greatest complication lies in the fact that the track development of the stations is falling considerably short of meeting the need. According to the specialists, we are currently approximately 500 tracks short of what is needed for normal operation. This is one of the serious current problems in transport which Comrade L. I. Brezhnev talked about in his accountability report to the 26th CPSU Congress. "It is important," said Leonid Il'ich, to concentrate our efforts on development of the station tracks--they provide an economical and rapid means of increasing the traffic capacity of the roads."

The task is clear--the tracks must be built. And although the job is one requiring high labor input, the work must be developed without delays. It is necessary to bring to a decisive halt the practice of turning over new lines without the necessary development of the contiguous stations. In March of this year, for example, the Dema-Orenburg line was put into operation. The trains began running. But where are they to be formed if in Orenburg they "forgot" to lay additional tracks.

The new plan for the formation of trains and the accelerated development of the stations will undoubtedly make for successful operation of the increasing flow of cars. But to exploit these circumstances, the marshalling plan itself--our important technological document--must be fulfilled precisely and without fail. We must inculcate a respect for this plan and we must create a situation wherein no one will, because of his own inclinations, get in the habit of changing the adopted system of organization of the flow of cars or clog the routing factories with "alien" cars.

7962
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OCEAN AND RIVER

BRIEFS

NEW TANKERS DESCRIBED--The Balfsudoproekt central designing bureau has developed a project of an oil tanker incorporating a number of the latest technical achievements. According to the regulations of the Intergovernmental Maritime Consultative Organisation each tanker must have 41 percent of its tanks protected, but in the new one all 100 percent of tanks will be protected against direct contact with water. The tanker will be 242.8 m long, 32.2 m wide; it will have a displacement of 84,600 tons and a cargo capacity of 68,000 tons; maximum power of the main engine will be 18,500 hp and the speed will be 16 knots. These vessels will replace the existing tankers of the "Sofia" series. They will have 25-30 years of service life. They will be the tankers of the 21st century. [Text] [Moscow SOVIET MILITARY REVIEW in English No 4, Apr 81 p 27] COPYRIGHT: Soviet Military Review," No 4, 1981/

"OTTO SCHMIDT" RESEARCH ICEBREAKER--The world's first research icebreaker has been put into service. This unique ship was built by the Leningrad Admiralty Association. The displacement of the icebreaker is 3,650 tons, it is equipped with a 5,400 hp diesel-electric engine and can sail 11 thousand miles without refuelling. On board the icebreaker are 14 research laboratories provided with up-to-date equipment for hydrographical, oceanographical, meteorological and other investigations in insufficiently explored and difficulty accessible areas of the Arctic Ocean. Research data will be processed by the ship computer centre. [Text] [Moscow SOVIET MILITARY REVIEW in English No 4, Apr 81 p 27] COPYRIGHT: Soviet Military Review," No 4, 1981/

NEW ESTONIAN PORT--Tallinn--The first steamship has docked at the pier of the new port which has been put into use on the island of Hijumaa [Khiyumaa]. It is the second largest port in Estonia. It was built in accordance with the long-range program for the social development of the republic's islands. [Text] [Moscow KRASNAYA ZVEZDA in Russian 16 May 81 p 1] COPYRIGHT: "Soviet Military Review," No 4, 1981/

NEW AMPHIBIAN--During the 11th Five-Year-Plan period Soviet industry will begin to produce new cross-country hovercraft of the "Gepard" type. It will be a light vehicle with an elegant passenger compartment accommodating five persons. The amphibian has two small plastic propellers housed in round shrouds, behind which blade-type control jets are located. The hovering propulsion plant is more economical than previous ones installed on vessels of the same type. The vehicle uses a 115 hp motor of the GAZ-53 truck. The speed is up to 70 km/h. This convenient reliable and cheap transportation means is designed not only for specialists but also for inhabitants of the most remote parts of the country. In winter and summer on rivers and snow-covered fields, tundra and impassable marshes the "Gepard" will deliver mail and food and help render timely medical help and other necessary services. [Text] [Moscow SOVIET MILITARY REVIEW in English No 6, Jun 81 p 38]

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